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(54) Support unit

(57) A support unit 10 for data processing equipment comprises a support member 15 which is mounted on a pivotal arm 30 and which remains horizontal as it is raised and lowered. Arm 30 is pivotally connected at pivots 31, 51 to a mounting member 20 and support member 15, and has bushes 56, 56' carrying an axially slidable rod 34 biased by an adjustable coil spring 57; rod 34 is connected to members 20, 15 by means of links 33, 53, the pivotal connections 32, 52 being offset from pivots 31, 51. Support member 15 may be mounted on arm 30 by a telescopic shaft 40. The entire support unit may rotate about a vertical pivot (21, Fig. 1 not shown).

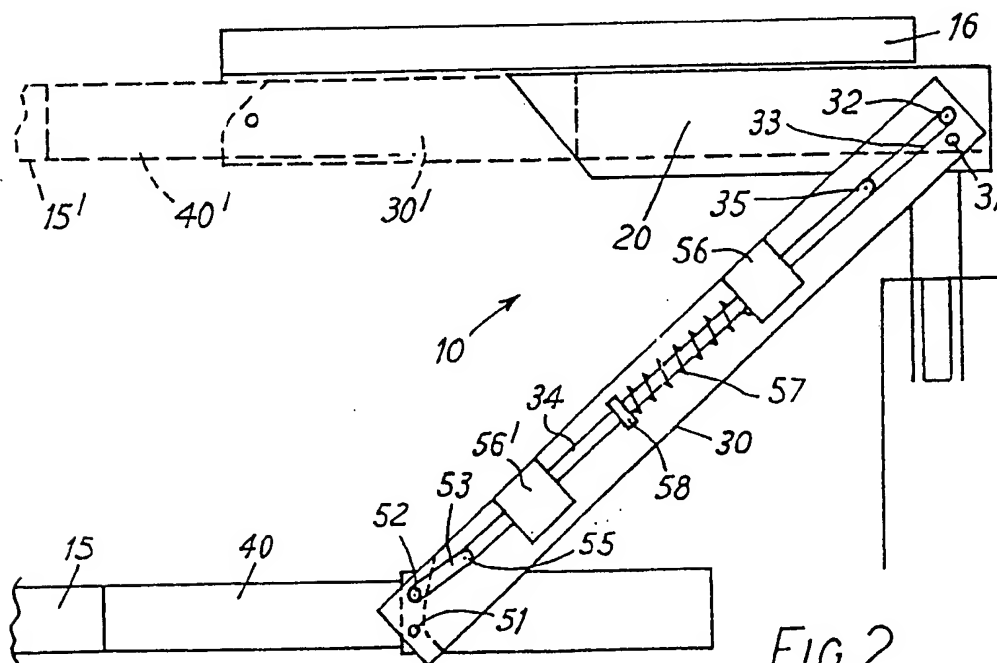
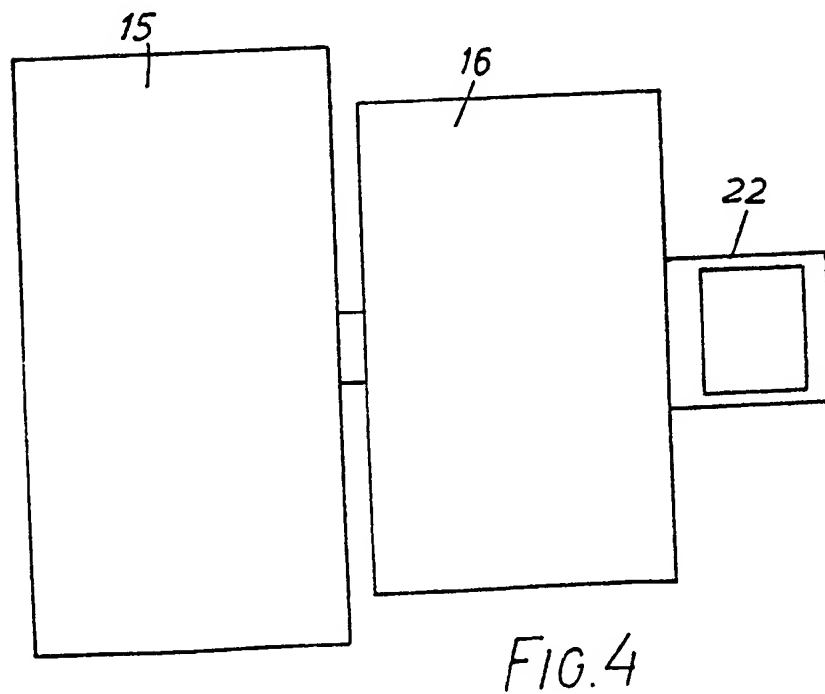
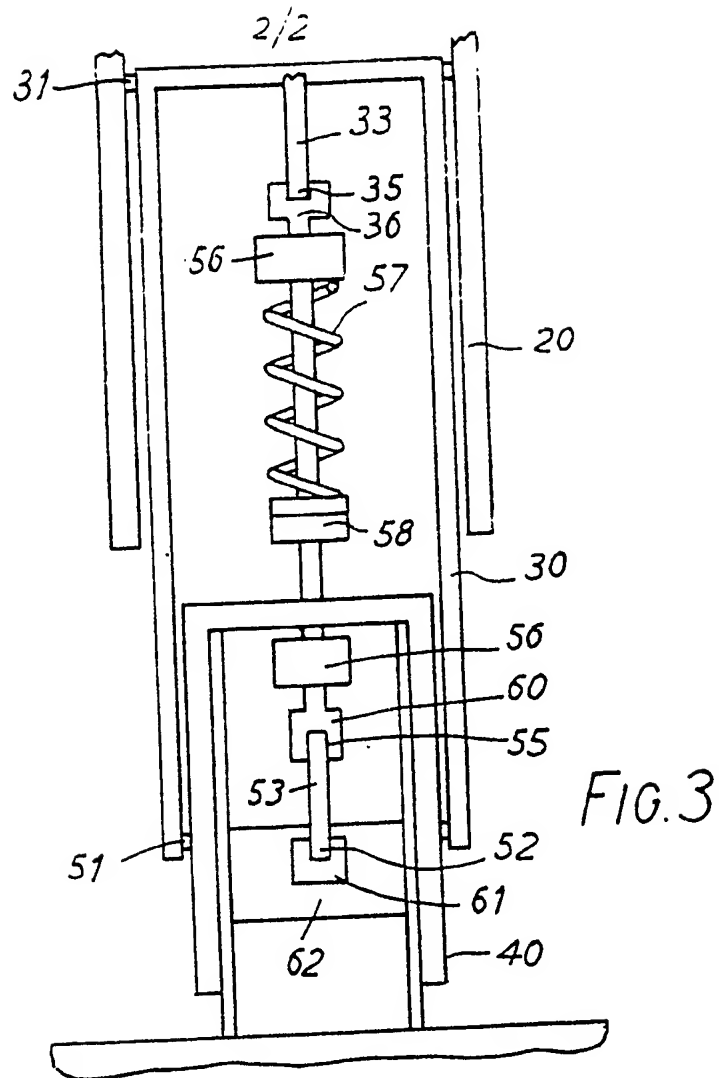


FIG. 2

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SPECIFICATION

Support unit

The present invention relates to a support unit and in particular to a support unit having a support member, e.g. for office data processing equipment, which can be raised and lowered.

In many offices the various items of data processing equipment such as V.D.U.s, logic units and keyboards occupy valuable desk space. In an attempt to solve this problem, static racks have been proposed. However these have the disadvantages that they still occupy a certain amount of desk space and that they can only be operated from a single position.

The present invention seeks to overcome or reduce at least one of the above disadvantages.

According to a first aspect of the present invention there is provided a support unit having a substantially horizontal support member pivotally attached to one end of an arm, the other end of which is pivotally attached to horizontal pivot means, the arrangement being such that the support member can be raised or lowered into a desired vertical position and the support member remains in said desired position.

The support member may be connected to the arm via an extendable shaft which permits the support member to be moved towards or away from the arm in a substantially horizontal direction, the arrangement being such that the support member remains substantially horizontal throughout the whole range of extension of the shaft.

The support unit may also comprise a horizontal support member fixed to the horizontal pivot means. In addition the support unit may be rotatable about a vertical axis.

According to a second aspect of the present invention there is provided a support unit comprising a mounting member, a support member and an arm which is pivotally connected at a first end to the mounting member about a first pivot axis and at its second end to the support member about a second pivot axis, the arm carrying a spring-biased rod extending along the arm, the rod having a respective link member pivotally attached to each of its ends, the link member at the first end of the arm being pivotally attached to the mounting member about a third pivot axis which is offset from the first pivot axis, and the link member at the second end of the arm being pivotally attached to the support member about a fourth pivot axis which is offset from the second pivot axis.

The directions of offset are preferably parallel, e.g. both vertical.

The arm preferably has bearing means which permit relative longitudinal movement of the rod. The spring-biasing of the rod is preferably provided by a coil spring located around the rod. The spring force of the spring is preferably adjustable.

A preferred embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, of which:

accordance with the present invention;

Fig. 2 is an enlarged schematic side view of part of the support unit of Fig. 1 in a different position;

Fig. 3 is a bottom plan view of part of the unit of Fig. 1; and

Fig. 4 is an overall top plan view of the support unit of Fig. 1.

Referring to the drawings there is shown a support unit 10 for office data processing equipment comprising a V.D.U. 11, a logic unit 12 and a keyboard 13. Keyboard 13 is mounted on a first support tray 15 and the V.D.U. and logic units are mounted on a second support tray 16.

Tray 16 is mounted on a mounting member 20 of inverted channel section. Mounting member 20 is pivotally mounted on a vertical support 21 on a fixed stand 22 on a desk top 70. The support 21 is provided with a suitable stop member to limit rotation thereof to an arc of 350°. This is to prevent repeated rotation of the unit in the same direction which would cause the cables for the data processing unit to become entangled.

Within the channel section of member 20 there is located an arm 30 which is also of inverted channel section. In the horizontal position of arm 30 shown in Figure 1, a telescopic shaft 40 is mounted therein on ball runners (not shown). The tray 15 for the keyboard 13 is mounted on the left hand end of shaft 40, so that the keyboard can be moved as desired towards or away from the arm 30.

The connections between the arm 30 and the other parts of the unit are shown in more detail in Figures 2 which shows in solid lines the keyboard 13 in a lowered position. The position shown in Fig. 1 is shown in dotted lines in Fig. 2 with dashes after the reference numerals.

The arm 30 is pivotally attached to the mounting member 20 at a horizontal pivot 31, and to the support shaft 40 at a horizontal pivot 51. Within the channel section of arm 30 there is mounted a rod 34, which is axially slidable within nylon bush bearings 56, 56' fixed to the inside of the channel. The bush bearings restrict lateral movement of the rod 34. At its ends the rod is formed into yoke members 36, 60 which are pivotally connected to the ends of respective link members 33 and 53. The other end of link 33 is pivotally attached to a horizontal pivot 32 to the mounting member 20. The axis of pivot 32 is vertically offset from the axis of pivot 31. The other end of link 53 is located in a yoke member 61 on a transverse part 62 of the shaft 40 so as to produce a pivotal attachment thereto in the form of a horizontal pivot 52. The axis of pivot 52 is vertically offset from the axis of pivot 51.

A coil spring 57 is located around a central region of rod 34. The spring is compressed by an adjustable amount between the upper bush 56 and an adjustable nut 58 on the rod.

The nut 58 is initially adjusted in accordance with the weight of the keyboard 13 so that the force of spring 57 maintains arm 30, shaft 40, tray 15 and the keyboard in any adjusted vertical position, and in the fully retracted and fully extended positions of shaft 40 and all intermediate positions thereof, and

Fig. 1 is a schematic side view of a support unit in

in all cases without further adjustment of the nut 58 being necessary. At all times the mechanism formed by rod 34, links 33 and 53 and spring 57 keeps tray 15 substantially horizontal.

- 5 When an operator wishes to use the data processing equipment he moves the keyboard tray 15 to a convenient position by rotation of the entire unit about support 21 and/or lowering of the keyboard (accompanied by pivoting of arm 30 and/or horizontal movement accompanied by extension or retraction of telescopic shaft 40. As the arm 30 is lowered away from member 20 the spring 57 is placed under further compression. When arm 30 is horizontal (Fig. 1) the arrangement is such that pivots 32 and 52 lie above imaginary straight line extensions of rod 34. As the arm is pivoted downwardly the links move into alignment with the rod 34. Upon further downward pivoting, pivot point 52 moves below the straight-line extension of rod 34. When the operator has finished with the unit, it can be rotated clear of his desk space.

- 20 An advantage of the above-described support unit is that it saves desk-top space, only room for stand 22 being necessary. At the same time it permits the keyboard to be moved effortlessly to any desired position. If he wishes, the operator can leave the keyboard in its Fig. 1 position and operate it whilst standing.

- 30 Another advantage of the support unit is that it can be operated from a number of alternative positions. For example if it is arranged between two adjacent work positions at a counter or bench, then a person sitting at either position can use the equipment by rotating the V.D.U. towards himself and then moving the keyboard. Moreover if several desks are arranged back-to-back, it is envisaged that the unit could be operated from up to four working positions, since the unit can rotate horizontally almost through a full circle. This feature means that a reduced number of items of data processing equipment are needed for a given number of potential operators. As these items are expensive, this leads to substantial savings in cost.

- 45 The tray 15 can support a wide range of weights of keyboards; it is only necessary to adjust the nut 58 accordingly for different weights.

- The height of the unit may be made adjustable by providing an adjustable distance collar on the vertical support 21.

- 50 In an alternative arrangement the unit is mounted on a stand resting on the floor of an office. This leads to an even greater saving of desk-top space. It is preferable with this alternative to attach the stand to the side of the desk to provide lateral support. The stand may include height adjustment means.

- 55 In another arrangement the stand 22 may be attached to a wall, see mounting holes 71 shown in dotted lines in Fig. 1; this also saves desk space.

- 60 Although the support unit has been described for use with data processing equipment, it can be used for any load which it is desired to move out of the way when not required.

CLAIMS

- 65 1. A support unit having a substantially horizontal support member pivotally attached to one end of an arm, the other end of which is pivotally attached to horizontal pivot means, the arrangement being such that the support member can be raised or lowered into a desired vertical position and the support member remains in said desired position.

- 70 2. A support unit comprising a mounting member, a support member and an arm which is pivotally connected at a first end to the mounting member about a first pivot axis and at its second end to the support member about a second pivot axis, the arm carrying a spring-biased rod extending along the arm, the rod having a respective link member pivotally attached to each of its ends, the link member at the first end of the arm being pivotally attached to the mounting member about a third pivot axis which is offset from the first pivot axis, and the link member at the second end of the arm being pivotally attached to the support member about a fourth pivot axis which is offset from the second pivot axis.

- 85 3. A support unit according to claim 2, wherein the directions of offset are parallel.

- 90 4. A support unit according to claim 2 or 3, wherein the spring-biasing of the rod is provided by a coil spring located around the rod.

5. A support unit according to claim 4, wherein the spring force of the spring is adjustable.

- 95 6. A support unit according to any of claims 2 to 5, wherein the arm has one or more bush bearings in which the rod is axially slidable.

7. A support unit according to claims 5 and 6, wherein an adjustable nut is mounted on the rod against one end of the spring and the other end of the spring lies against one of the bush bearings, the spring force of the spring being adjustable by adjustment of the nut.

- 100 8. A support unit according to any preceding claim, wherein the support member is attached to the arm via an extendable shaft which permits the support member to be moved towards or away from the arm in a substantially horizontal direction, the arrangement being such that the support member remains substantially horizontal throughout the whole range of extension of the shaft.

- 105 9. A support unit according to any preceding claim and which is rotatable about a vertical axis.

- 110 10. A support unit according to claim 9, wherein the rotation about the vertical axis is limited to less than one complete turn.

- 115 11. A support unit according to any of claims 2 to 7 and having a further support member fixed to the second pivot axis.

- 120 12. A support unit substantially as herein described with reference to the accompanying drawings.

13. A data processing equipment arrangement comprising a support unit as claimed in claim 11, wherein a keyboard unit is positioned on said first-

mentioned support member and a visual display unit and/or a logic unit is/are positioned on said further support member.

14. A data processing equipment arrangement as

5 herein described with reference to the accompanying drawings.

15. As an independent invention the additional feature of any of claims 3 to 11.

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